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Docket No.: 44033-122

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of :

Marc J. MCKENNON, et al. :

Application No.: 09/859,503 : Group Art Unit: 1624

Filed: May 18, 2001 : Examiner: M. Berch

For: PYRIDOPYRIMIDINE COMPOUNDS AND THEIR USES

PETITION TO REVIEW OBJECTION BY EXAMINER

Commissioner for Patents
Washington, DC 20231

Sir:

Applicants hereby petition the Director of the PTO in accordance with 37 C.F.R. § 1.181(a)(1) to review an objection made by the Examiner in the above-referenced patent application. Specifically, the Examiner objected to claims 4-7 on the ground that they are in improper dependent form. Although an appeal has been taken from the Examiner's rejections of the claims, this petition is being filed within two-months from the action complained of after reconsideration by Applicants.

Background

Claim 4 was amended in an Amendment dated April 2, 2002, to be dependent on new claim 37. Claims 5-7 are each dependent on claim 4. In an Office Action dated May 29, 2002 (Paper No. 8), the Examiner objected to claims 4-7 on the ground that there is no provision in claim 37 for the substituents set forth in claims 4-7 since claim 37 does not provide for

carboxylic or heterocyclic substituents. In response to the Office Action, Applicants filed a response on September 30, 2002, requesting reconsideration of the objection. In their response, Applicants made the following argument:

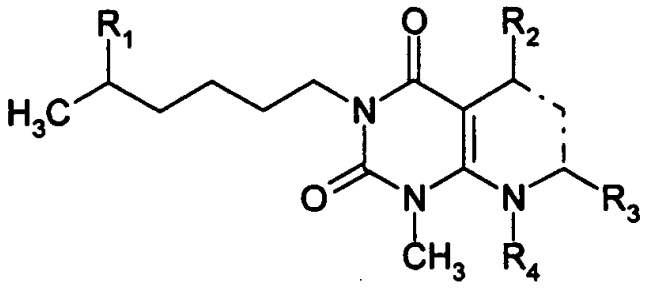
> Claim 4 is directed to the substituted substituents of R_2 and R_3 groups. Claim 5 defines the substituted substituents on the heterocyclic group or carboxylic [sic, carbocyclic] group set forth in claim 4. Claim 6 defines the heterocyclic group set forth in claim 4, and claim 7 defines the carbocyclic group set forth in claim 4. It is respectfully requested the rejection be reconsidered and withdrawn.

In an Office Action dated November 5, 2002 (Paper No. 12), the Examiner maintained the objection and made the following arguments in support of the objection:

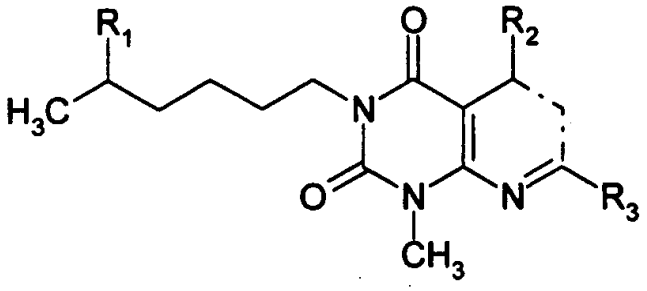
> Claims 4-7 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. There is no provision in claim 37 for such substituents. For example, claim 4 lists carboxyl or heterocyclic, yet none of the claim 37 choices have carboxyl or heterocycle as a substituent for R_2 or R_3.
>
> The traverse is unpersuasive. Applicants are believed to be misreading claim 37. The only choices for R2 and R3 are those listed in the claim, and this does not provide for the further substititon [sic, substitution] by e.g. carboxyl. The "substituted" in the first line refers to the substituents already present, that is, for example, the 4-chloropentyl has the Cl substituent. Noe [sic, Note] that the page 32 language, which applicants have pointed to, does not provide for further substitution. If applicants disagree, theyare [sic, they are] asked to show where the specification would provide for descriptive support for 4-chloropentyl substituted by carboxyl. Page 32 does not have it.

The Claims

37. A therapeutic compound, including resolved enantiomers, diastereomers, tautomers, salts and solvates thereof, having one of the following formulae:



or



wherein:

R_1 is selected from a member of the group consisting of hydrogen, hydroxyl, methoxyl, acylamino group, cyano group, sulfo, sulfonyl, sulfinyl, sulfhydryl (mercapto), sulfeno, sulfanilyl, sulfamyl, sulfamino, phosphino, phosphinyl, phospho, phosphono and $-NR_aR_b$, wherein each of R_a and R_b may be the same or different and each is selected from the group consisting of hydrogen and optionally substituted: $C_{(1-20)}$alkyl, $C_{(3-12)}$cycloalkyl, $C_{(2-20)}$alkenyl, $C_{(3-12)}$cycloalkenyl, $C_{(2-20)}$alkynyl, aryl, heteroaryl, and heterocyclic group;

R_2 and R_3 are independently selected from a unsubstituted or substituted member of the group consisting of methyl, ethyl, oxo, isopropyl, n-propyl, isobutyl, n-butyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, 3-hydroxy-n-butyl, 2-methoxyethyl, 4-methoxy-n-butyl, 5-hydroxyhexyl, 2-bromopropyl, 3-dimethylaminobutyl, 4-chloropentyl, methylamino, amino-methyl, and methylphenyl; and

R_4 may be hydrogen or an optionally substituted member of the group consisting of $C_{(1-20)}$alkyl, $C_{(3-12)}$cycloalkyl, $C_{(2-20)}$alkenyl, $C_{(3-12)}$cycloalkenyl, $C_{(2-20)}$alkynyl, aryl, heteroaryl, and heterocyclic group.

4. The therapeutic compound of claim 37, wherein each of R_2 and R_3 is substituted with one or more members of the group consisting of hydroxyl, methyl, carboxyl, furyl, furfuryl, biotinyl, phenyl, naphthyl, amino group, amido group, carbamoyl group, cyano group, sulfo, sulfonyl, sulfinyl, sulfhydryl, sulfeno, sulfanilyl, sulfamyl, sulfamino, phosphino, phosphinyl, phospho, phosphono, N-OH, $-Si(CH_3)_3$, $C_{(1-3)}$alkyl, $C_{(1-3)}$hydroxyalkyl, $C_{(1-3)}$thioalkyl, $C_{(1-3)}$alkylamino, benzyldihydrocinnamoyl group, benzoyldihydrocinnamido group, optionally substituted heterocyclic group and optionally substituted carbocyclic group.

5. The therapeutic compound of claim 4, wherein the heterocyclic group or carbocyclic group is substituted with one or more members of the group consisting of halo, hydroxyl, nitro, SO_2NH_2, $C_{(1-6)}$alkyl, $C_{(1-6)}$haloalkyl, $C_{(1-6)}$alkoxyl, $C_{(1-11)}$alkoxyalkyl, $C_{(1-6)}$alkylamino, and $C_{(1-6)}$aminoalkyl.

6. The therapeutic compound of claim 4, wherein the heterocyclic group is a member selected from the group consisting of acridinyl, aziridinyl, azocinyl, azepinyl, benzimidazolyl, benzodioxolanyl, benzofuranyl, benzothiophenyl, carbazole, 4a H-carbazole, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, dioxoindolyl, furazanyl, furyl, furfuryl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolenyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, isobenzofuranyl, isochromanyl, isoindolinyl, isoindolyl, isoquinolinyl, isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxazolidinyl, oxazolyl, oxiranyl, perimidinyl, phenanthridinyl, phenanthrolinyl, phenarsazinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, 4-pipendonyl, piperidyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyndinyl, pyridyl, pyndyl, pyrimidinyl, pyrrolidinyl, 2-pyrrolidonyl, pyrrolonyl, pyrrolyl, 2H-pyrrolyl, quinazolinyl, 4H-quinolizinyl, quinolinyl, quinoxalinyl, quinuclidinyl, β-carbolinyl, tetrahydrofuranyl, tetrahydroisoquinolinyl, tetrahydroquinolinyl, tetrazolyl, 6H-1,2,5-thiadiazinyl, 2H-,6H-1,5,2-dithiazinyl, thianthrenyl, thiazolyl, thienyl, thiophenyl, triazinyl, xanthenyl and xanthinyl.

7. The therapeutic compound of claim 4, wherein the carbocyclic group is a member selected from the group consisting of adamantyl, anthracenyl, benzamidyl, benzyl, bicyclo[2.2.1] heptanyl, bicyclo[2.2.1]hexanyl, bicyclo[2.2.2]octanyl, bicyclo[3.2.0]heptanyl, bicyclo[4.3.0]-nonanyl, bicyclo[4.4.0]decanyl, biphenyl, biscyclooctyl, cyclobutyl, cyclobutenyl, cycloheptyl, cycloheptenyl, cyclohexanedionyl, cyclohexenyl, cyclohexyl, cyclooctanyl, cyclopentadienyl, cyclopentanedionyl, cyclopentenyl, cyclopentyl, cyclopropyl, decalinyl, 1,2-diphenylethanyl, indanyl, 1-indanonyl, indenyl, naphthyl, napthlalenyl, phenyl, resorcinolyl, stilbenyl, tetrahydronaphthyl, tetralinyl, tetralonyl, and tricyclododecanyl.

Arguments and Discussion

The Examiner argues that the only choices for R_2 and R_3 are those listed in the claim 37 and the list "does not provide for the further substituton [sic, substitution]." Applicants respectfully disagree. Claim 37 recites that "R_2 and R_3 are independently selected from a unsubstituted or substituted member of the group consisting of ...." The specification at page 32, lines 11-16, discloses that "R_2 and R_3 are independently selected from a member of the group consisting of halo, thio, oxo, $C_{(1-20)}$alkyl, $C_{(1-20)}$hydroxyalkyl, $C_{(1-20)}$thioalkyl, $C_{(1-20)}$alkylthio, $C_{(1-20)}$alkylamino, $C_{(1-20)}$alkylaminoalkyl, $C_{(1-20)}$aminoalkyl, $C_{(1-20)}$aminoalkoxyalkenyl, $C_{(1-20)}$aminoalkoxyalkynyl, $C_{(1-20)}$diaminoalkyl, $C_{(1-20)}$triaminoalkyl, $C_{(1-20)}$tetraaminoalkyl, $C_{(1-20)}$aminotrialkoxyamino, $C_{(1-20)}$alkylamido, $C_{(1-20)}$alkylamidoalkyl, $C_{(1-20)}$amidoalkyl, $C_{(1-20)}$acetamidoalkyl, $C_{(1-20)}$alkenyl, $C_{(1-20)}$alkynyl, $C_{(1-20)}$alkoxyl, $C_{(1-20)}$alkoxyalkyl, and $C_{(1-20)}$dialkoxyalkyl." Further, at page 32, lines 24-27 of the specification, the application discloses that "R_2 and R_3 may be selected from the group consisting of methyl, ethyl, oxo, isopropyl, n-propyl, isobutyl, n-butyl, t-butyl, 2-hydroxyethyl, 3-hydroxypropyl, 3-hydroxy-n-

butyl, 2-methoxyethyl, 4-methoxy-n-butyl, 5-hydroxyhexyl, 2-bromopropyl, 3-dimethylaminobutyl, 4-chloropentyl, methylamino, aminomethyl, and methylphenyl." The specification then discloses in the paragraph bridging pages 32 and 33 that "[i]n preferred embodiments, R_2 and R_3 may be optionally substituted with one or more members of the group consisting of hydroxyl, methyl, carboxyl, furyl, furfuryl, biotinyl, phenyl, naphthyl, amino group, amido group, carbamoyl group, cyano group, sulfo, sulfonyl, sulfinyl, sulfhydryl, sulfeno, sulfanilyl, sulfamyl, sulfamino, phosphino, phosphinyl, phospho, phosphono, N-OH, $-Si(CH_3)_3$, $C_{(1-3)}$alkyl, $C_{1-3)}$hydroxyalkyl [sic, $C_{(1-3)}$hydroxyalkyl], $C_{1-3)}$thioalkyl [sic, $C_{(1-3)}$thioalkyl], $C_{1-3)}$alkylamino [sic, $C_{(1-3)}$alkyl-amino], benzyldihydro-cinnamoyl group, benzoyldihydrocinnamido group, optionally substituted heterocyclic group and optionally substituted carbocyclic group."

The specification discloses two lists for defining R_2 and R_3: a list of generic groups at page 32, lines 11-16 and a list of more specific groups at page 32, lines 24-27. Taking the disclosure of these lists in conjunction with the disclosure in the paragraph bridging pages 32 and 33 of the specification, a person having ordinary skill in the art would have been led to recognize that, in a preferred embodiment, the generic groups and the more specific groups for R_2 and R_3 groups (as recited in claim 37) could be substituted with the groups defined in claim 4.

The Examiner further argues that the term "substituted" in the first line of apparently claim 4 "refers to the substituents already present," presumably in claim 37. Applicants respectfully disagree that the substituents are "already present." Applicants' disclosure at pages 32 and 33 of the specification as discussed above allows for substitution on the groups defined in claim 37. The listing of the more specific groups at page 32, lines 24-27 includes 4-chloropentyl

and 2-bromopentyl. Claim 4 does not include a halogen as a substituent. Therefore, the list in claim 37 does not include "substituents already present" in claim 4.

The Examiner argues that "claim 4 lists carboxyl or heterocyclic, yet none of the claim 37 choices have carboxyl or heterocycle as a substituent for R_2 or R_3." Claim 37 recites that R_2 and R may be "unsubstituted or substituted" groups. This is supported on pages 32 and 33, as discussed, *supra*. Among the "substituted" groups set forth in the paragraph bridging pages 32 and 33 is a substituted heterocyclic group and a substituted carbocyclic group. These are substituents that made be substituted on the groups recited in claim 37. This substitution is clearly supported by the disclosure on pages 32 and 33 of the specification as discussed, *supra*.

The Examiner argues that the disclosure does not provide specific descriptive support for "4-chloropentyl substituted by carboxyl." The list of more specific groups at page 32, lines 24-27 of the specification (which groups are recited in claim 37) includes groups such as 4-chloropentyl, 2-bromopropyl and methylphenyl which are not within the generic groups listing at page 32, lines 11-23 of the specification. Therefore, the listing of the particular R_2 and R_3 at page 32, lines 24-27 of the specification is not a listing of groups within the generic listing, but a another list of groups within the scope of the invention. Therefore, the paragraph bridging pages 32 and 33 would apply to both listings to define the preferred embodiments of the invention which are now recited in claims 4-7. The paragraph provides adequate disclosure for a carboxyl substituent on any of the generic groups or any of the more specific groups. There is no requirement that the specification specifically disclose a working example or specifically recite 4-chloropentyl substituted by carboxyl as suggested by the Examiner.

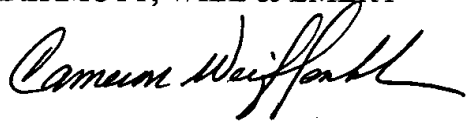
Conclusion

It is respectfully urged that claims 4-7 are in proper dependent form for the reasons set forth above. It is respectfully requested that this petition be granted and that the objection to claims 4-7 be withdrawn.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

McDERMOTT, WILL & EMERY



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